

REMARKS/ARGUMENTS

Reconsideration is respectfully requested in view of the above amendments and the following remarks.

Claims 1-20 are amended herein to recite that the ballast is a high intensity discharge lamp ballast. This is supported by the disclosure, for example at page 1, lines 6-11.

Claims 2, 3, 7-10, 13, 14, and 17-20 are amended for formal reasons. As these amendments are not made to overcome art, Applicants respectfully submit that they should not be interpreted in a limiting fashion.

New claims 21-24 are added as dependents of claims 1, 14, 17, and 18 respectively, reciting that the ignition frequency of the inverter circuit is less than its steady-state frequency. This is supported by the disclosure, for example at page 8, lines 19-20, wherein an example is cited with an initial switching frequency of about 50 kHz and a steady-state switching frequency of about 400 kHz.

No new matter has been added. Claims 1-24 are pending in the application.

As a preliminary matter, Applicants note that all of the references relied upon in the Office Action are directed to fluorescent lighting and/or ballasts or circuitry for fluorescent lighting. By contrast, the pending claims of the present invention recite a high intensity discharge ballast.

Applicants respectfully point out that fluorescent lighting and high intensity discharge lighting are entirely different in terms of both their structure and their manner of operation. For example, while fluorescent lamps typically produce energy in the form of ultraviolet light and require a phosphor in order to re-emit the energy as visible light, high intensity discharge lamps typically emit visible light directly. Fluorescent lamps and high intensity discharge lamps also

differ in terms of the spacing between electrodes, the composition and pressure of the vapor(s) that may be present within the lamps, etc. In general, the processes involved and the mechanisms used are very different from one another.

More particularly, although both fluorescent lights and high intensity discharge lights utilize a mechanism referred to as a ballast, a ballast for a fluorescent light likewise is different in structure and operation from a ballast for a high intensity discharge light. For example, a fluorescent lamp generally has a much lower ignition voltage requirement than a high intensity discharge lamp. Also, a fluorescent lamp typically has a relatively high ignition frequency and a low steady-state frequency, while a high intensity discharge lamp as in the present invention has a steady-state frequency higher than its ignition frequency. In addition, high intensity discharge lamps generate acoustic resonance at certain frequencies, while fluorescent lamps do not, and consequently the control strategies for the two types of devices differ.

As a result of these and other differences, features such as circuit arrangements, operating parameters, and other teachings are not readily interchangeable between fluorescent and high intensity discharge lamps. Indeed, attempting to simply transfer a feature from a fluorescent lamp to a high intensity discharge lamp may be counterproductive, to the point of rendering the high intensity discharge lamp non-functional.

Therefore, Applicants respectfully question whether the references relied upon in the Office Action can be considered to be applicable to the claims as presently pending. Applicants respectfully submit that disclosure specific to fluorescent lamps could not be considered to anticipate or render obvious a ballast for a high intensity discharge lamp as in the present invention, even if that disclosure were otherwise similar to the present invention, which point Applicants do not concede.

Turning to the particulars of the Office Action, claim 1 is rejected under 35 U.S.C. § 102(e) as being anticipated by Schleicher (U.S. Patent No. 6,181,080). Applicants respectfully traverse the rejection.

Claim 1 recites a high intensity discharge lamp ballast. As previously noted, Applicants respectfully submit that Schleicher is directly to circuits for use with fluorescent-type lamps. Schleicher does not disclose or suggest a high intensity discharge ballast, or high intensity discharge lighting in general. Consequently, even if Schleicher could be considered to disclose features similar to those of the present invention, which point Applicants do not concede, Applicants respectfully submit that this would not anticipate or render obvious the present invention.

In addition, Applicants note that claim 1 of the present invention recites an electronic high intensity discharge ballast with a resonant circuit and at least one ignition capacitor provided between the resonant circuit and the lamp.

Although the rejection characterizes ignition capacitor 31 of Schleicher as being disposed between a resonant circuit and a lamp, Applicants respectfully submit that this is not the case. Applicants reference, for example, Figure 3, and column 5, lines 25-27. As shown and described therein, capacitor C31 is actually part of the resonance circuit of Schleicher.

Thus, even assuming the resonance circuit of Schleicher is similar to the resonant circuit of the present invention, which point Applicants do not concede, capacitor C31 cannot be considered to be between the resonance circuit and a lamp (or anything else) since it is part of the resonance circuit itself.

By contrast, the present invention according to claim 1 includes both a resonant circuit and an ignition capacitor between the resonant circuit and the lamp, and hence distinct from the resonant circuit and the lamp. Applicants reference, for example, Figure 4 of the present application, showing the arrangement of ignition capacitor C_0 . Schleicher does not disclose or suggest a distinct ignition capacitor between a resonant circuit and a lamp.

As the present invention according to claim 1 includes features neither disclosed nor suggested by Schleicher, Applicants respectfully submit that claim 1 is not anticipated by Schleicher. Reconsideration and withdrawal of the rejection is respectfully requested.

Claims 14, 15, and 17-20 are rejected under 35 U.S.C. § 102(b) as being anticipated by Xia (U.S. Patent No. 5,739,645). Applicants respectfully traverse the rejection.

Claims 14, 17, and 18 recite a high intensity discharge lamp ballast. As previously noted, Applicants respectfully submit that Xia is directed to a ballast for use with fluorescent-type lamps. Xia does not disclose or suggest a high intensity discharge ballast, or high intensity discharge lighting in general. Consequently, even if Xia could be considered to disclose features similar to those of the present invention, which point Applicants do not concede, Applicants respectfully submit that this would not anticipate or render obvious the present invention.

In addition, particularly with regard to claim 14, Applicants note that claim 14 of the present invention recites means for detecting whether a short circuit or open circuit condition is present at the lamp.

The rejection asserts that Xia teaches means for detecting a short circuit or open circuit condition, specifically integrated circuit IC1. However, Applicants do not find disclosure in Xia that IC1 functions in this manner, or that other structures therein do so.

Xia describes for example at column 6, lines 35-39, that IC1 will go into a standby mode if a lamp is removed or damaged. The rejection appears to consider shutdown upon removal or damage of a lamp to be equivalent to detection of an open circuit, although Xia does not explicitly disclose this. However, even if detection of an open circuit by Xia may be assumed *arguendo*, Xia is silent as to the matter of detecting short circuits.

Applicants note that although damage to a lamp may conventionally cause the lamp to "burn out", this does not imply that a short circuit is produced, nor is a short circuit conventionally a normal occurrence upon removal of or damage to a lamp.

Thus, even if Xia may be considered to detect open circuits, which point Applicants do not concede, Xia does not disclose or suggest detecting short circuits.

As the present invention according to claims 14, 17, and 18 includes features neither disclosed nor suggested by Xia, Applicants respectfully submit that claims 14, 17, and 18 are not anticipated by Xia. Reconsideration and withdrawal of the rejection is respectfully requested.

Claim 15 depends from claims 14, and claims 19 and 20 depend from claim 18. These dependent claims incorporate the limitations thereof, and the remarks made above with regard to independent claims 14 and 18 apply equally to these dependent claims. Applicants respectfully submit that separate arguments need not be presented in their support at this time. Applicants do not concede the correctness of the rejection, and reserve the right to present further arguments.

Claim 2 is rejected under 35 U.S.C. § 103(a) as being obvious from Schleicher. Applicants respectfully traverse the rejection.

Claim 2 depends from claim 1, and incorporates the limitations thereof. For at least the reasons presented above, Applicants believe that independent claim 1 is distinguished over Schleicher. The remarks made above with regard to independent claim 1 apply equally to claim 2, and Applicants respectfully submit that separate arguments need not be presented in its support at this time. Applicants do not concede the correctness of the rejection, and reserve the right to present further arguments.

Claim 16 is rejected under 35 U.S.C. § 103(a) as being obvious from Xia in view of Stack (U.S. Patent No. 6,222,322). Applicants respectfully traverse the rejection.

Claim 16 depends from claim 14, and incorporates the limitations thereof. For at least the reasons presented above, Applicants believe that independent claim 14 is distinguished over Xia. The remarks made above with regard to independent claim 1 apply equally to claim 14.

Although Stack is relied upon to teach delay means, Stack does not overcome the deficiencies of Xia as noted above. Stack, like Xia, is directed to fluorescent lighting, not high intensity discharge lighting, and Stack also does not disclose or suggest anything with regard to high intensity discharge lighting. Furthermore, Stack does not disclose or suggest means for detecting whether a short circuit or open circuit condition is present at a lamp.

As the present invention according to claim 14, and by extension claim 16, includes features neither disclosed nor suggested by Xia or Stack, alone or in combination, Applicants respectfully submit that claim 16 is not obvious from Xia in view of Stack. Reconsideration and withdrawal of the rejection is respectfully requested.

Claims 3-11 are rejected under 35 U.S.C. § 103(a) as being obvious from Schleichner in view of Xia. Applicants respectfully traverse the rejection.

Claims 3-11 depend from claim 1, and incorporate the limitations thereof. For at least the reasons presented above, Applicants believe that independent claim 14 is distinguished over Schleichner. The remarks made above with regard to independent claim 1 apply equally to dependent claims 3-11.

Although Xia is relied upon to teach delay means, Stack does not overcome the deficiencies of Schleichner as noted above. Xia, like Schleichner, is directed to fluorescent lighting, not high intensity discharge lighting, and Xia also does not disclose or suggest anything with regard to high intensity discharge lighting.

As the present invention according to claim 1, and by extension claims 3-11, includes features neither disclosed nor suggested by Schleichner and Xia, alone or in combination,

Applicants respectfully submit that claims 3-11 are not obvious from Schleichner in view of Xia. Reconsideration and withdrawal of the rejection is respectfully requested.

Claim 12 is rejected under 35 U.S.C. § 103(a) as being obvious from Schleichner in view of Xia, further in view of Stack. Applicants respectfully traverse the rejection.

Claim 12 depends from claim 1, and incorporates the limitations thereof. For at least the reasons presented above, Applicants believe that independent claim 1 is distinguished over Schleichner and Xia. The remarks made above with regard to independent claim 1 apply equally to claim 12.

Although Stack is relied upon to teach delay means, Stack does not overcome the deficiencies of Schleichner and Xia as noted above. Stack is directed to fluorescent lighting, not high intensity discharge lighting; like Schleichner and Xia, Stack does not disclose or suggest anything with regard to high intensity discharge lighting.

As the present invention according to claim 1, and by extension claim 12, includes features neither disclosed nor suggested by Schleichner, Xia, or Stack, alone or in combination, Applicants respectfully submit that claim 16 is not obvious from Schleichner in view of Xia, further in view of Stack. Reconsideration and withdrawal of the rejection is respectfully requested.

Applicants appreciate the determination that claim 13 includes allowable subject matter. Applicants do not concede that claim 13 is allowable only for the reasons indicated in the Office Action.

As all matters raised in the Office Action are now addressed, Applicants believe all pending claims likewise are in condition for immediate allowance. Favorable reconsideration in the form of a Notice of Allowance is respectfully requested.

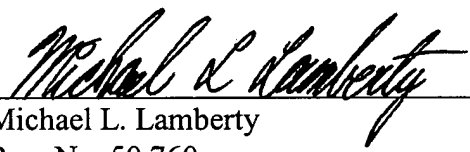
If a telephone conference would be helpful in resolving any issues concerning this communication, please contact the undersigned at (612) 336-4789, or Applicants' primary attorney of record, Michael D. Schumann (Reg. No. 30,422) at (612) 336-4638.



Respectfully submitted,

MERCHANT & GOULD P.C.
P. O. Box 2903
Minneapolis, MN 55402-0903
(612) 332-5300

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Michael L. Lamberty
Reg. No. 50,760
MDS/MLL